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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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EXAMINER

PATEL, ISHWARBHAI B

ART UNIT PAPER NUMBER

2827

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/068,229

Applicant(s)

BRIST ET AL.

Examiner

Ishwar (I. B.) Patel

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 11-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of group I, claims 1-10 and 19-20 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 11-18 withdrawn from further consideration.

Further, specie IV, reading on figure 5, claims 1-10 and 19-20, elected.

Drawings

2. (a) The drawings are objected to because the figures are improperly cross hatched. All of the parts shown in section, and only those parts, must be cross hatched. The cross hatching patterns should be selected from those shown on page 600-114/115 of the MPEP based on the material of the part. See also 37 CFR 1.84(h)(3) and MPEP 608.02 .

(b) Arrow showing the trench 318, figure 3D, is marked at the wrong place.

(c) In figure 7A-7B, reference numerals should be 702, 702'....etc., as described in the specification, instead of 602, 602'...etc.

(d) In figure 7A-7B, Trench width and sidewall marked as "A" and "B", whereas described in the specification as "a" and "b".

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: "metalized layer 412 should be - - metalized layer 408 - - .

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 19 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 19 and 20, "one or more conductive trenches connecting to at least one of the plurality of metalized planes" is not clear.

The trench is connecting at least two of the metalized planes.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-8, 10 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Cotton, US Patent Application Publication Number 2002/0130739.

Regarding claims 1 and 19, Cotton discloses an apparatus, comprising:

a plurality of metalized planes (see figure 1 and 13);

one or more dielectric layers separating the plurality of metalized planes (see figures 1 and 13); and

one or more conductive trenches connecting to at least one of the plurality of metalized planes (trenches 150, 850, see figure 1 and 13).

Regarding claim 2, Cotton further discloses a plane with plurality of segments, (three segments of the conductive layer 116, see figure 1).

Regarding claim 3, Cotton further discloses a trench connects to a separate segment, (two trenches on the right side connecting to two separate segments of the conductive layer 116, see figure 1).

Regarding claims 4-7, the conductive planes segments of Cotton are inherently used as power / ground layers, depending upon the requirement.

Regarding claim 8, Cotton further discloses at least one of the conductive trenches connects to least two of the metalized planes and one or more metalized planes in-between the connected metalized planes are isolated from the connecting conductive trench, see figure 1 and 13.

Regarding claim 10, Cotton further discloses at least one of the conductive trenches electrically conductive, plated through column 3, paragraph 0038.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 9 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cotton, US Patent Application Publication Number 2002/0130739, as applied to claims 1-8, above.

Regarding claims 9, the applicant is claiming the trench thermally conductive.

Though, Cotton does not explicitly disclose the thermal conductivity of the trenches. The trenches are made by plating, which will generally be a metal plating, and will be inherently be thermally conductive. As such, metal plated vias or metal filled vias are well known in the art, and can be used, either for transmitting electrical signal, or for transmitting the heat depending upon the specific requirement.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the apparatus of Cotton with thermally conductive trenches in order to have the desired functionality of transferring heat.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kwong discloses groove / channel with copper coating 8, see figure 1a and 1b.

Arledge et al., discloses metal plated trenches, see figure 3.

Sen et al., discloses a channel shape via structure.

Steigerwald et al., discloses split plane with various power supply voltage, see figure 3.

Tanaka discloses a signal layer with ground area.

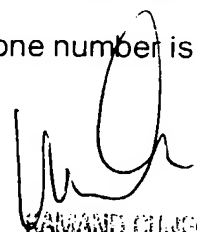
Itoh discloses a shielding by making a conductive slots, see figure 2.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (703) 305 2617. The examiner can normally be reached on M-F (8:30 - 5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L Talbott can be reached on (703) 305 9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3431 for regular communications and (703) 305 7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

ibp
June 7, 2003


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